Electronic Supplementary Material (ESI) for Analyst.

Supporting information

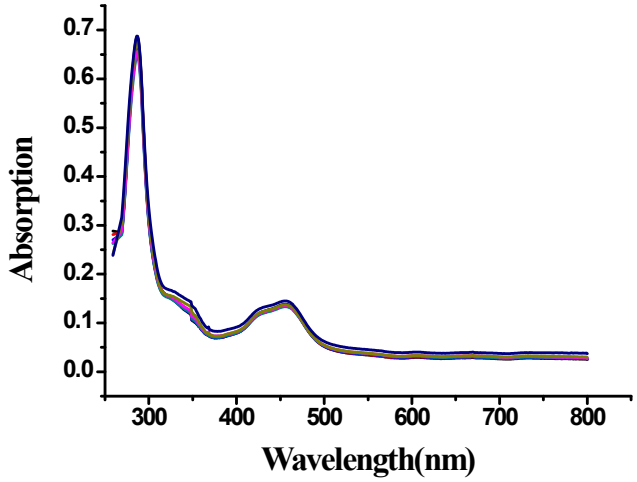

Fig. S1 Absorption spectra of 10 μM **1** upon addition of increasing concentration of ClO^- in 0.1 M PBS (pH 7.4), **1** alone (blue), addition of 10 μM ClO^- (green), 50 μM ClO^- (pink), 100 μM ClO^- (brown), respectively.

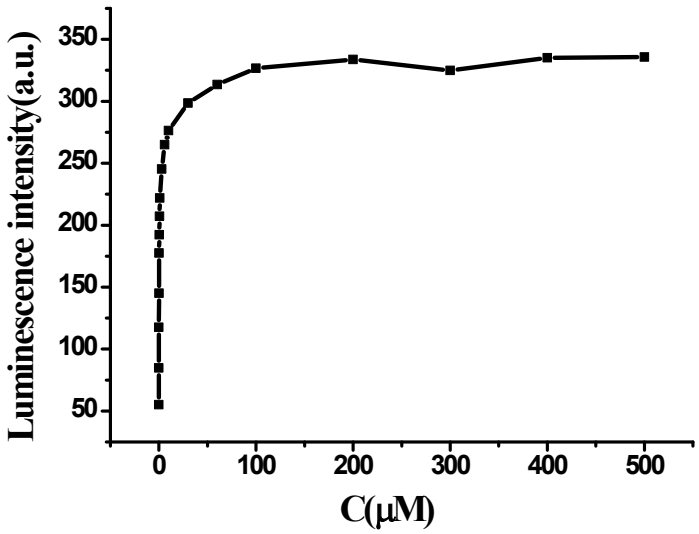

Fig. S2 The relationship between the maximum luminescence intensity of 10 μM **1** and the concentration of ClO^- (0 to 100 μM). The titration was performed in 0.1 M pH 7.4 PBS, with excitation at 450 nm ranging from 470 nm to 700 nm.

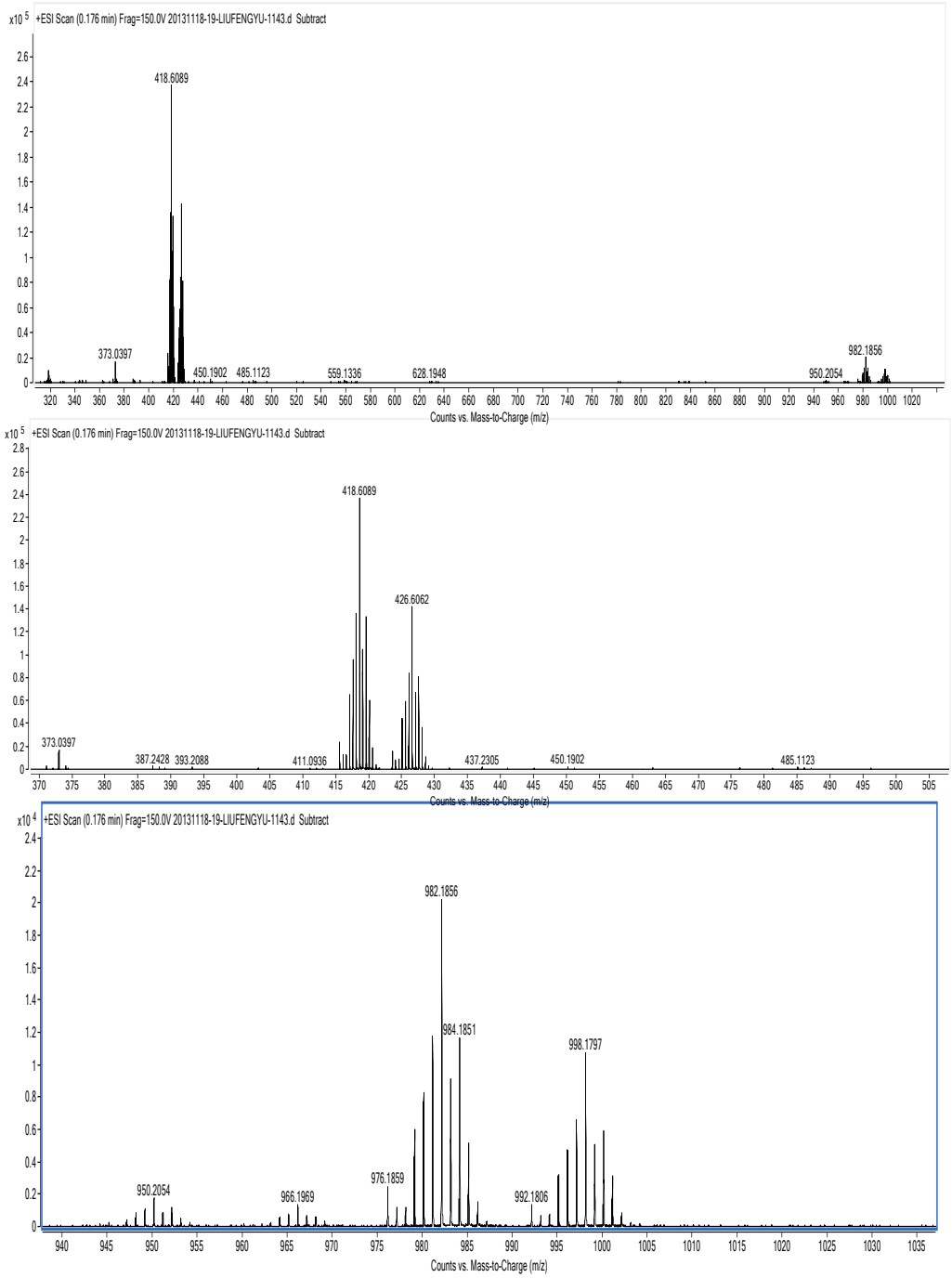

Fig. S3 Mass spectra of the oxidized product after the reaction between **1** and ClO^-

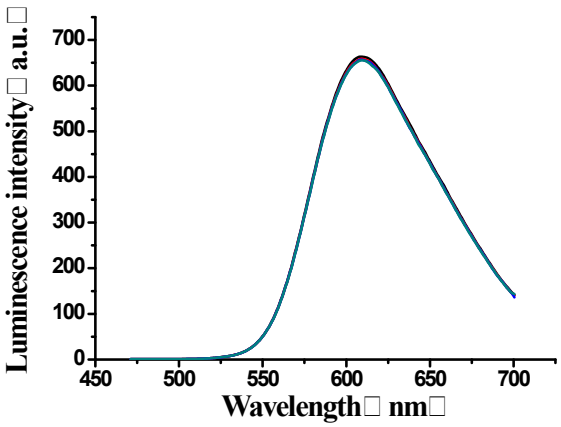

Fig. S4 The emission spectra of $Ru(bpy)_3^{2+}$ (10 μM) upon addition of increasing concentration of ClO^- (0 to 100 μM) in 0.1 M (pH 7.4) PBS, excited at 450 nm ranging from 470 nm to 700 nm. $Ru(bpy)_3^{2+}$ (black), addition of 10 μM ClO^- (green), 50 μM ClO^- (pink), 100 μM ClO^- (brown), respectively.

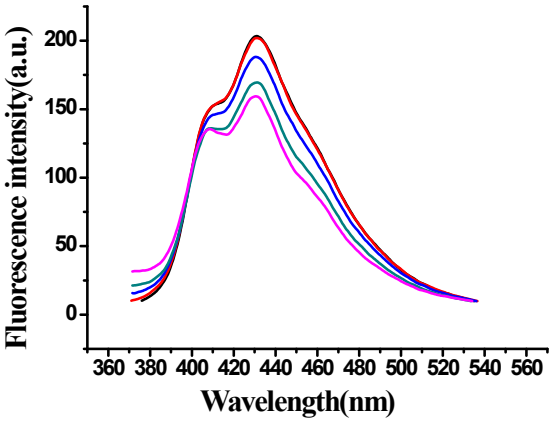

Fig. S5 The emission spectra of PTZ (10 μM) upon addition of increasing concentration of ClO^- in a mixture of 0.1 M (pH 7.4) PBS and acetonitrile (V/V = 8:2), excited at 350 nm ranging from 370 nm to 560 nm. PTZ (pink), addition of 10 μM ClO^- (green), 50 μM ClO^- (blue), 100 μM ClO^- (red), respectively.

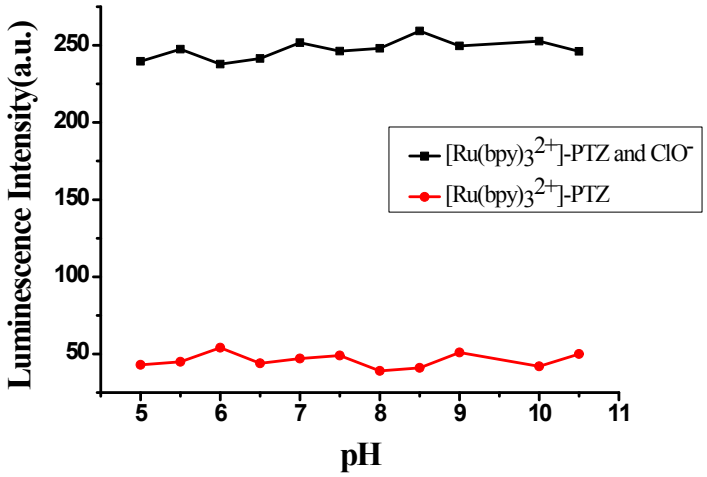

Fig. S6 Luminescence intensity of **1** (10 μM) with absence and presence of 100 μM ClO^- under various pH in 0.1 M PBS (λ_{ex}: 450 nm, λ_{em}: 605 nm). pH values: 5, 5.5, 6, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, 9.5, 10.0, 10.5, 11.0.

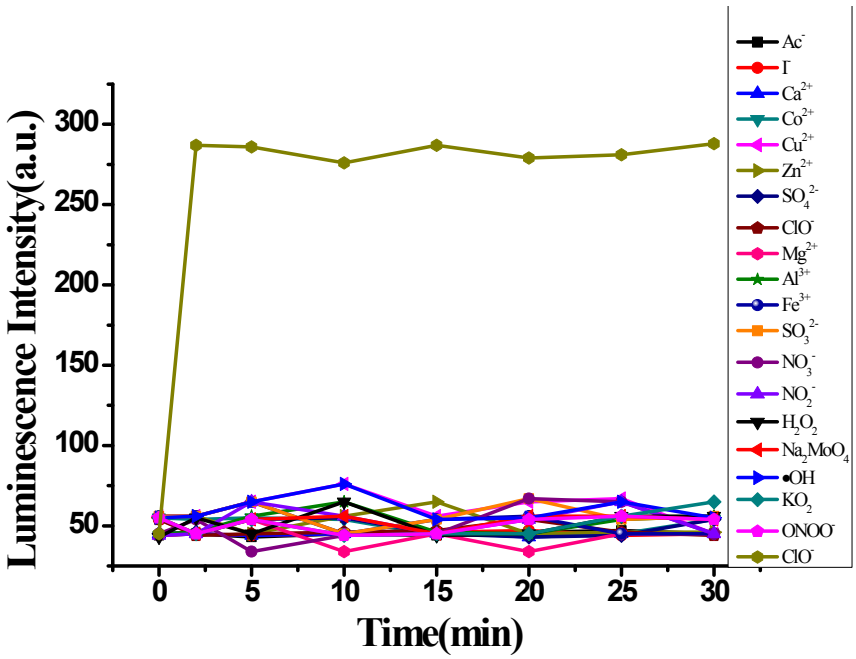

Fig.S7 Time dependent luminescence intensity changes of **1** (10 μM) with 100 μM different substance in 0.1 M pH 7.4 PBS (λ_{ex}=450 nm, λ_{em}=605 nm).

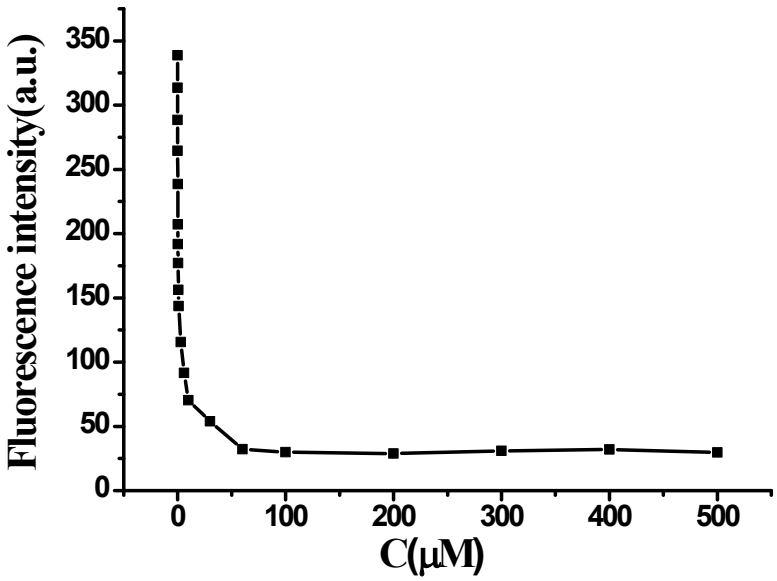

Fig. S8 The relationship between the maximum luminescence intensity of 10 μM the oxidation form of **1** and the concentration of H_2S (0 to 100 μM). The titration was performed in 0.1 M pH 7.4 PBS, with excitation at 450 nm ranging from 470 nm to 700 nm.

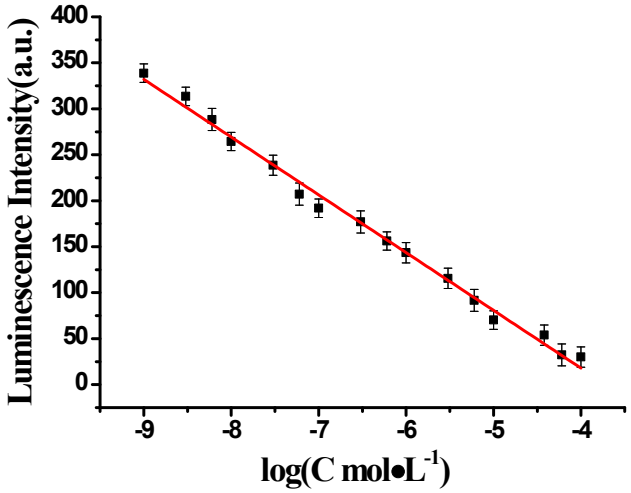

Fig. S9 The linear relationship between the maximum luminescence intensity of 10 μM the oxidation form of **1** and the logarithmic concentration of H_2S (From -9 to -4), The titration was performed in 0.1 M pH 7.4 PBS, with excitation at 450 nm ranging from 470 nm to 700 nm.

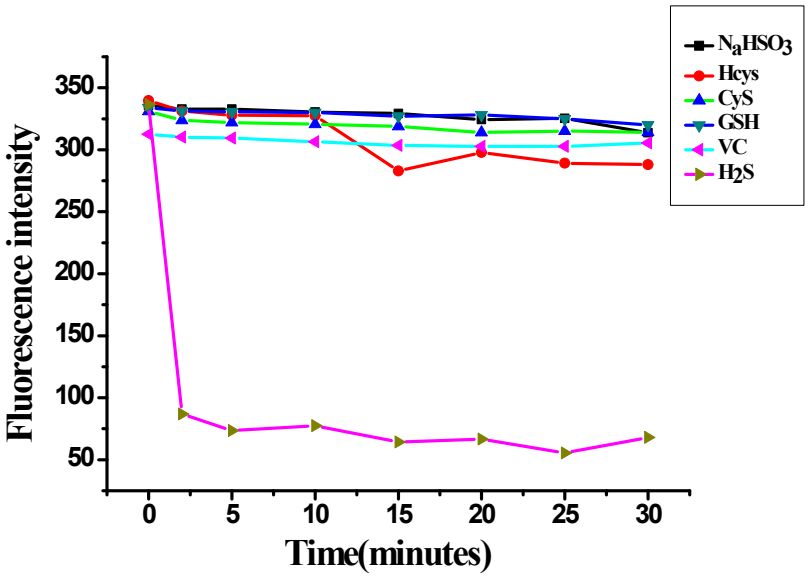

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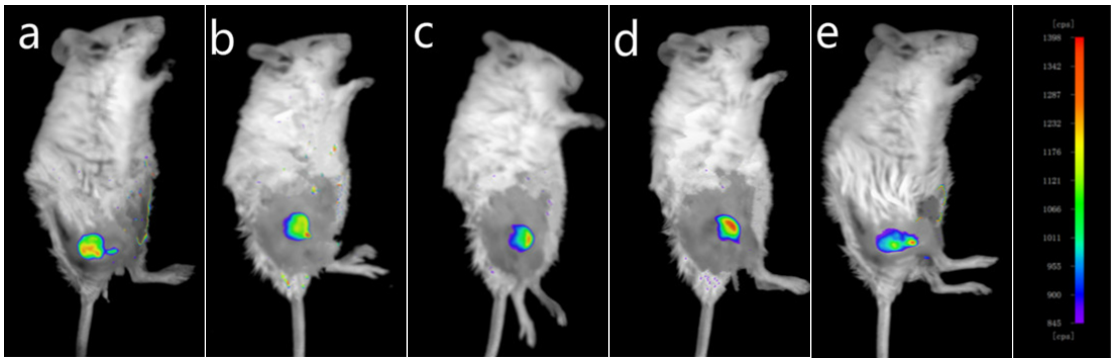
Fig. S10 Time dependent luminescence intensity changes of 10 μM the oxidation form of **1** with 100 μM reductants in 0.1 M PBS at pH =7.4 (λ_{ex} = 450 nm, λ_{em} = 605 nm).



Max: 1.20E-7 1.19E-7 1.19E-7 1.45E-7 1.18E-7

Fig. S11 The luminescence imaging of the redox cycle between ClO^- and H_2S in live mice. a) **1** (10 μM, 100 μL) in 0.1 M PBS (pH 7.4) was loaded in the leg cortex of the mice. b) 600 μM PABA (0.1 μL) was loaded in the same position. c) 100 μM ClO^- (0.1 μL) was loaded in the same position. d) another 100 μM ClO^- (0.1 μL) was loaded in the same position. e) 100 μM H_2S (0.1 μL) was loaded in the same position.

Table S1 The recovery of H_2S added into a tap water sample detected by the oxidation form of **1** (10 μM **1** + 100 μM ClO^-) in PBS (0.1 M, pH = 7.4).[a]

No.	Added (mol/L)	Detected (mol/L)	Average (mol/L)	Recovery (%)	RSD[b] (%)
1	1.0×10^{-8}	0.97×10^{-8} 1.12×10^{-8} 0.98×10^{-8}	1.02×10^{-8}	102	1.35
2	1.0×10^{-7}	1.03×10^{-7} 1.12×10^{-7} 1.01×10^{-7}	1.05×10^{-7}	105	5.80
3	1.0×10^{-6}	1.05×10^{-6} 1.01×10^{-6} 1.07×10^{-6}	1.04×10^{-6}	104	3.08
4	1.0×10^{-4}	1.07×10^{-4} 0.99×10^{-4} 1.10×10^{-4}	1.05×10^{-4}	105	5.70

[a] Average of three determinations and the averaged readings were used. [b] RSD stands for relative standard deviation.